

**REMARKS**

Claims 1-17 are currently pending in the subject application, and are presently under consideration. Claims 1-17 stand rejected. Claims 1, 7, 11, 14, and 17 have been amended. Claims 6 and 8 have been cancelled. New claims 18-24 have been added. Favorable reconsideration of the application is requested in view of the amendments and comments herein.

**I. Rejection of Claim 1 Under 35 U.S.C. §102(a)**

Claim 1 stands rejected under 35 U.S.C. §102(a) as being anticipated by U.S. Patent No. 6,175,719 to Sarraf, et al. ("Sarraf"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Amended claim 1 recites an input section to receive a plurality of first spot beams via any one of a plurality of uplink antennas, an output section to transmit a plurality of second spot beams via any one of a plurality of downlink antennas, and a payload architecture flexibly and selectively power dividing, switching, and filtering signals from a plurality of first spot beams received by an input section and routing the signals to an output section to be transmitted as a plurality of second spot beams. Sarraf teaches a payload design for a multi-spot beam satellite communication system that selects input signal bands for routing to appropriate downlink spots. However, Sarraf does not teach an input section to receive a plurality of spot beams via any one of a plurality of uplink antennas, an output section to transmit a plurality of second spot beams via any one of a plurality of downlink antennas, and that a selection of input signal bands are power divided.

Sarraf teaches flexibility of communication in that the uplink can receive the entire primary frequency bandwidth of the system (col. 3, ll. 51-53). In addition, Sarraf teaches "a plurality of spot-beam uplinks each of which receive signals transmitted from a particular section of a total geographic area to be serviced by the communication system, [and] providing a plurality of spot-beam downlinks each of which transmits signals to a particular section of the total service area....Point-to-point services are supported by routing point-to-point transmissions received by the plurality of uplinks to a particular one of the plurality of downlinks..." (col. 2, ll.

2-12). Sarraf further teaches that "all PTP transmissions...originating from a particular spot or footprint are received by a corresponding one of the antennas and receiver subsystems..." (col. 3, ll. 30-33). Therefore, Sarraf specifically teaches that each of the uplink and downlink antennas service respective dedicated spot beams. Accordingly, Sarraf does not teach an input section to receive a plurality of first spot beams via any one of a plurality of uplink antennas and an output section to transmit a plurality of second spot beams via any one of a plurality of downlink antennas, as recited in amended claim 1.

In rejecting claim 6, the Office Action dated June 24, 2004 (page 4) asserts that Sarraf, at column 3, lines 26-39, inherently teaches power dividing of input signals because a DSPR distributes signals that are to be transmitted on a downlink. Representative for Applicant respectfully disagrees. Distribution of signals does not result in power division unless a given signal is split into two or more copies of the same signal. The cited section of Sarraf teaches that the DSPR provides demodulation, routing/switching, multiplexing, and modulation of traffic data packets into TDM signals (col. 3, ll. 26-30). This section does not disclose that the signals are split or divided into more than one signal. Additionally, Sarraf teaches that the DSPR "processes and groups the data packets into individual signals for delivery via an output port to a particular *one* of the transmitter amplifier subsystems and antennas for subsequent transmission to the designated spot area." (col. 3, ll. 34-39, emphasis added). This section discloses that signals are processed for individual signals to be transmitted from one amplifier subsystem and antenna to a single designated spot area. Sarraf teaches that data packets from a signal are modified into a TDM format through multiplexing and switching and are routed to an output section for transmission, and thus, because Sarraf does not teach that the signals are split or divided, power dividing is not inherent in the teaching of Sarraf.

Therefore, neither Sarraf, nor any other cited art, teach an input section to receive a plurality of first spot beams via any one of a plurality of uplink antennas, an output section to transmit a plurality of second spot beams via any one of a plurality of downlink antennas, and a payload architecture flexibly and selectively power dividing, switching, and filtering signals

from a plurality of first spot beams, as recited in claim 1. Accordingly, Sarraf does not anticipate claim 1. Withdrawal of the rejection of claim 1 is respectfully requested.

## **II. Rejection of Claims 2-6 Under 35 U.S.C. §103(a)**

Claims 2-6 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Sarraf in view of U.S. Publication No. 2002/0032003 to Avitzour, et al. ("Avitzour"). Claim 6 has been cancelled. Withdrawal of this rejection is respectfully requested for at least the following reasons.

Avitzour teaches a high-capacity, multi-purpose satellite communications system optimized for two-way broadband communications. Claims 2-5 depend from claim 1, which, as discussed above, is patentable over the cited art. Accordingly, claims 2-5 are also patentable over the cited art. Withdrawal of the rejection of claims 2-5 is respectfully requested.

In addition, claim 3 recites that the plurality of first spot beams includes primary beams and secondary beams. The Office Action asserts that Avitzour teaches primary beams and secondary beams, in that secondary beams are taught by the generic beams G1-Gn (Office Action dated June 24, 2004; citing Avitzour, paragraph [0037], ll. 1-6). Representative for Applicant respectfully disagrees. Avitzour specifically teaches that the generic beams G1-Gn are not spot beams by stating "[t]hese satellites may direct one or more of a plurality of beams to one or more relatively confined geographical areas (spot beam areas) or to a broader (generic) area," directly after defining the generic beams G1-Gn (paragraph [0037], ll. 6-9). Additionally, when discussing FIG. 6, Avitzour later discloses that "satellites may include a generic mode coverage in addition to and/or as an alternative to spot beam coverage." (paragraph [0043], ll. 1-3). Avitzour is making a clear distinction between generic beams and spot beams. Accordingly, Avitzour, alone or in combination with other cited art, does not teach or suggest that a plurality of first spot beams includes secondary beams, as recited in claim 3. Withdrawal of the rejection of claim 3, as well as claim 4 which depends therefrom, is respectfully requested.

**III. Rejection of Claims 7, 9-11, and 14-16 Under 35 U.S.C. §103(a)**

Claims 7, 9-11, and 14-16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Sarraf in view of U.S. Patent No. 6,233,433 to Norin ("Norin"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claim 7 has been amended to recite that the payload architecture selectively switches the plurality of first spot beams to allow any uplink signal to act as a gateway signal for purposes of testing. In the rejection of claim 8, the Office Action asserts that "it would be obvious to one of ordinary skill in the art at the time the invention was made to use the gateway taught in Avitzour in the satellite system of Sarraf in view of Norin for the purpose of establishing an outbound channels path to the end user terminals." (Office Action dated June 24, 2004, page 7). It is respectfully submitted that Representative for Applicant assumes that the Office Action intended to recite that it would be obvious to one of ordinary skill in the art at the time the invention was made to use the gateway taught in Avitzour in the satellite system of Sarraf in view of Norin for the purpose of selectively switching the plurality of first spot beams to allow any uplink beam to act as a gateway beam. As such, Representative for Applicant respectfully disagrees.

Norin teaches a satellite communications repeater test method allowing multiple transponders to be tested from a single ground station. Norin, however, does not teach or suggest selectively switching a plurality of spot beams to allow any uplink beam to act as a gateway beam, as recited in claim 7. Avitzour teaches the use of a hub for providing an uplink to a broadband communication satellite. Avitzour, however, only teaches the use of a single hub, and thus does not teach or suggest selectively switching a plurality of spot beams to allow any uplink beam to act as a gateway beam. Further, Avitzour does not teach or suggest the use of the hub for the purposes of testing a plurality of first and second spot beams. Accordingly, Sarraf, Norin, and Avitzour, taken individually or in combination with each other, do not teach or suggest selectively switching a plurality of spot beams to allow any uplink beam to act as a gateway beam. Withdrawal of the rejection of claim 7, as well as claims 9-11 which depend therefrom, is respectfully requested.

Amended claim 11 recites that the testing operates in conjunction with a control system to reposition at least one first antenna and at least one second antenna so that each one of said plurality of first spot beams and said plurality of second spot beams can be tested from said single ground station. Norrin teaches that commands are transmitted from a test station directing a satellite to change its position so that the receive antenna feeding the transponder under test is aligned with the ground test antenna (col. 4, ll. 27-30). Thus, Norrin teaches that the satellite itself is repositioned to transmit to a test station. Norrin, however, individually or combined with Sarraf and/or Avitzour, does not teach or suggest that a first and a second antenna on a satellite are reposition for the purposes of testing from a single ground station. Accordingly, claim 11 should be allowed over the cited art. Withdrawal of the rejection of claim 11 is respectfully requested.

Amended claim 14 recites that any one of the plurality of first spot beams can act as a gateway for the purposes of testing the first spot beam and the second spot beam. As discussed above with regard to claim 7, Sarraf, Norin, and Avitzour, taken individually or in combination with each other, do not teach or suggest that any one of the plurality of first spot beams can act as a gateway for the purposes of testing the first spot beam and the second spot beam, as recited in claim 14. Accordingly, withdrawal of the rejection of claim 14, as well as claims 15 and 16 which depend therefrom, is respectfully requested.

For the reasons described above, claims 7, 9-11, and 14-16 should be patentable over the cited art. Accordingly, withdrawal of this rejection is respectfully requested.

#### **IV. Rejection of Claims 8, 12, and 13 Under 35 U.S.C. §103(a)**

Claims 8, 12, and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Sarraf in view of Norin, and further in view of Avitzour. Claim 8 has been cancelled. Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claim 12 recites that the plurality of first spot beams includes spot beams corresponding to primary cells and secondary cells. As discussed above with regard to claim 3, Avitzour, alone or in combination with other cited art, does not teach or suggest that a plurality of first spot

beams includes secondary cells. Accordingly, withdrawal of the rejection of claim 12, as well as claim 13 which depends therefrom, is respectfully requested.

**V. Rejection of Claim 17 Under 35 U.S.C. §103(a)**

Claim 17 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Sarraf in view of Norin, and further in view of U.S. Patent No. 6,288,673 to Dolmeta, et al. ("Dolmeta"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claim 17 recites that the satellite comprises one or more shared antenna apertures receiving the plurality of first spot beams and transmitting the plurality of second spot beams, and the shared antenna aperture is repositioned for each pair of one of the plurality of first spot beams and one of the plurality of second spot beams corresponding to a cell. Dolmeta teaches a transmit and/or receive antenna comprising an array of radiating elements. However, claim 17 depends from claim 14, which, as discussed above, is patentable over the cited art. Accordingly, withdrawal of the rejection of claim 17 is respectfully requested.

**VI. New claims 18-24**

New claim 18 depends from claim 1 and recites that power dividing is performed through a plurality of power dividers such that a given signal from said plurality of first spot beams is routed to a plurality of switching devices. As discussed above, claim 1 should be patentable over the cited art. Accordingly, so also should new claim 18. In addition, none of the cited art teach or suggest the use of power dividers. Accordingly, allowance of new claim 18, as well as new claim 19 which depends therefrom, is respectfully requested.

New claim 19 depends from new claim 18 and recites that the power dividers comprise at least one of a plurality of 1:3 power dividers and 1:2 power dividers. As discussed above, new claim 18 should be patentable over the cited art. Accordingly, so also should new claim 19. In addition, none of the cited art teach or suggest the use of power dividers. Accordingly, allowance of new claim 19 is respectfully requested.

New claim 20 depends from claim 1 and recites an inverse multiplexer operative to receive power divided and switched signals from the plurality of first spot beams and combine them into a first signal, wherein the first combined signal is transmitted from the output section to a gateway ground cell. As discussed above, claim 1 should be patentable over the cited art. Accordingly, so also should new claim 20. In addition, none of the cited art teach or suggest an inverse multiplexer operative to combine power divided and switched signals, as recited in claim 20. Accordingly, allowance of new claim 20, as well as claim 21 which depends therefrom, is respectfully requested.

New claim 21 depends from new claim 20 and recites that the gateway ground cell is covered by one of the second spot beams. As discussed above, new claim 20 should be patentable over the cited art. Accordingly, so also should new claim 21. In addition, none of the cited art teach or suggest a gateway ground cell that is covered by a second spot, the second spot beam being transmitted from the satellite. Accordingly, allowance of new claim 21 is respectfully requested.

New claim 22 depends from claim 2 and recites that the gateway is operative to generate an uplink signal and monitor a downlink signal corresponding to the uplink signal for the purposes of testing. As discussed above, claim 2 should be patentable over the cited art. Accordingly, so also should new claim 22. In addition, none of the cited art teach or suggest a gateway that generates an uplink signal and monitors a corresponding downlink signal for the purposes of testing, as recited in new claim 22. Accordingly, allowance of new claim 22 is respectfully requested.

New claim 23 depends from claim 7 and recites a plurality of 1:3 power dividers operative to route any of the uplink signals to any of the plurality of second spot beams, such that any uplink signal can act as a gateway beam for purposes of testing. For the reasons stated above with regard to new claims 18 and 19, new claim 23 should be patentable over the cited art. Accordingly, allowance of new claim 23 is respectfully requested.

New claim 24 depends from claim 14 and recites power dividing uplink signals received from the plurality of first spot beams and routing any of the uplink signals to any of the plurality

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of second spot beams, such that any uplink signal can act as a gateway beam for purposes of testing. For the reasons stated above with regard to claim 23, new claim 24 should be patentable over the cited art. Accordingly, allowance of new claim 24 is respectfully requested.



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**CONCLUSION**

In view of the foregoing remarks, Applicant respectfully submits that the present application is in condition for allowance. Applicant respectfully requests reconsideration of this application and that the application be passed to issue.

Please charge any deficiency or credit any overpayment in the fees for this amendment to our Deposit Account No. 20-0090.

Respectfully submitted,

Date 11/19/09

Christopher P. Harris  
Christopher P. Harris  
Registration No. 43,660

CUSTOMER No.: 26,294

TAROLLI, SUNDHEIM, COVELL, & TUMMINO L.L.P.  
526 SUPERIOR AVENUE, SUITE 1111  
CLEVELAND, OHIO 44114-1400  
Phone: (216) 621-2234  
Fax: (216) 621-4072